E D U Q 8170756

Niveau(x) d'enseignement: 6
Centre d'intérêt: 34

Numéro EDUQ : 8170756

Proulx, Pierre-Paul, 1938-.

Summary of a study of the interprovincial and international mobility of students and manpower in Canada and their implication for post-secondary education financing formulae / Pierre-Paul Proulx and R. Lacroix. -- [Montréal] : Conference of Rectors and Principals of Quebec Universities, 1971.
17 f. : 1 graph. ; 29 cm.

"A paper presented to the Canadien Society for the Study of Higher Education at its annual meeting in St-John's, Newfoundland, June 9, 1971".. Notes (part. bibliographiques) au bas des p.

Cote Dewey: 378.1691/P968s

Cote LC: LA/417.7

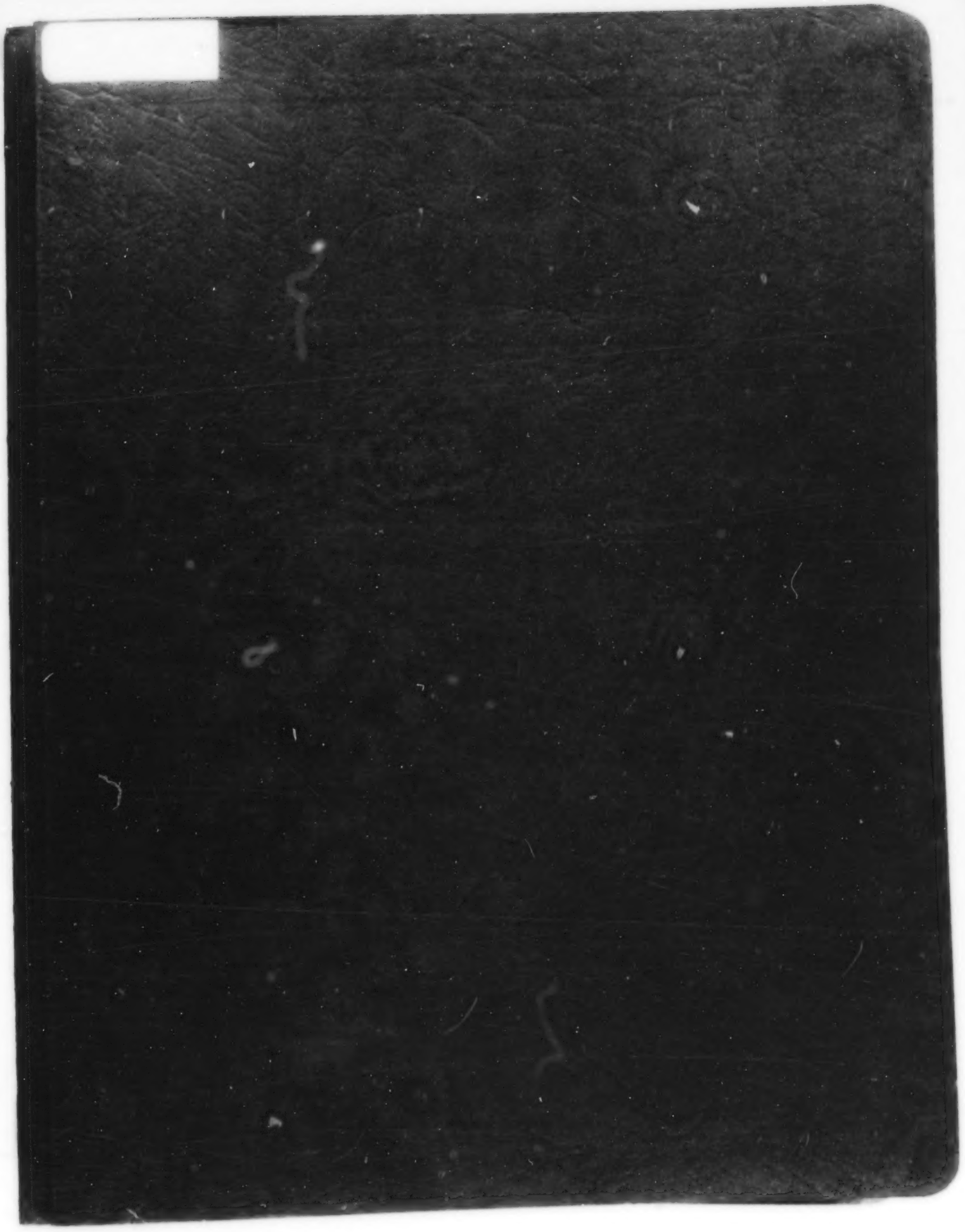
Descripteur(s): *Caractéristiques de l'étudiant *Caractéristiques socio-économiques *Mobilité scolaire *Mobilité professionnelle *Collégial (Niveau) *Universitaire (Niveau)

Identificateur(s) de nom: *Canada

Identificateur(s) de sujet: *Caractéristiques socio-professionnelles

Sommaire de la première étape d'une étude visant à démontrer qu'il convient de tenir compte à la fois de la mobilité étudiante et de la mobilité professionnelle lorsque vient le moment d'élaborer une formule de financement de l'enseignement postsecondaire. Un premier volet, à partir des données du Conseil économique du Canada, examine le phénomène de la mobilité étudiante et professionnelle interprovinciale et internationale. Suit un examen de l'importance relative de certaines caractéristiques sur la mobilité-étudiante: sexe, état civil, langue maternelle, langue de travail, lieu de résidence, revenu et scolarité des parents, revenu de l'étudiant.

Type de document: r
Auteur de l'analyse: ar



E D U Q 8170756

A paper presented to the Canadian Society for the Study of Higher Education at its annual meeting in St. John's, Newfoundland, June 9, 1971.

SUMMARY OF A STUDY OF THE INTERPROVINCIAL AND INTERNATIONAL MOBILITY OF STUDENTS AND MANPOWER IN CANADA AND THEIR IMPLICATION FOR POST-SECONDARY EDUCATION FINANCING FORMULAE

This study will be presented to the Council of Ministers of Education in a few weeks. Consequently the emphasis in this summary will be more on method and data sources than on the conclusions.

Pierre-Paul Proulx
Executive Director,
Conference of Rectors and Principals of Quebec Universities and

R. Lacroix,
Professeur adjoint,
Département des sciences économiques,
Université de Montréal

The authors wish to thank Messrs. N. Hung, M. Proulx and J. Gélinas whose assistance made it possible to clarify certain concepts, improve certain methods, and to obtain quantitative results.

INTRODUCTION

The study attempts to describe patterns of student and manpower mobility in Canada, and to analyse some of the factors which explain the mobility in order to make recommendations concerning some of the characteristics of post-secondary education financing formulae.

The study attempts to demonstrate that it is desirable to take both student and graduate manpower flows into consideration in the financing formulae, for the net gain or loss position of provinces as indicated only by student flows is very often reversed in light of the retention ratios of graduates which exist in certain provinces. In other words, some provinces train many out-of-province and international students, but they also keep many such graduates and benefit from international and interprovincial mobility of manpower.

The first section of the study examines interprovincial and international mobility of students in Canada's post-secondary educational system. Most of the

data was obtained from the Economic Council of Canada's Zsigmond and Wenaas study.[1]

Additional data was obtained in special compilation from the D.B.S. post-secondary student population survey, 1968-1969.[2]

The data for the study of interprovincial mobility of graduate manpower was obtained from the Department of Manpower and Immigration 1967 survey of Canada's highly qualified manpower resources.[3]

Some of the analysis performed and reported upon in J.B. MacDonald, et. al., was also utilized for this purpose.[4]

---

1. Zsigmond, Z.E. et C.J. Wenaas, Inscriptions dans les institutions d'enseignement, par province, de 1951-1952 à 1980-1981. Etude no. 25, 25 janvier 1970 . Conseil économique du Canada.

2. D.B.S. Post-Secondary Student Population Survey, 1968-69. Catalogue Number 81-543, occasional, March 1970. Hereafter referred to as PSSP.

3. Atkinson, A.G.; Barnes, K.C.; Richardson, E., Canada's Highly Qualified Manpower Resources, Research Branch, Program Development Service, Department of Manpower and Immigration, 1970.

4. MacDonald, J.B., et al. Le gouvernement fédéral et l'aide à la recherche dans les universités canadiennes. Etude spéciale no 7, réalisée pour la Conseil des Sciences du Canada et le Conseil des Arts.

The second section of the report examines the relative importance of sex, marital status, mother tongue and working language, income of parents, education of mother and father, income of students, and distance upon the mobility patterns of students.

The third section discusses tests of theories to explain manpower mobility, extensions to convert into monetary terms the quantitative estimates of mobility of students and manpower, and finally some implications are drawn for financing formulae as they relate to post-secondary education in Canada.

An appendix to the paper reviews policies of provinces and/or post-secondary institutions as they relate to admissions policies and in and out-of-province fees and quotas.

I. A DESCRIPTION OF THE PHENOMENON

A. THE MOBILITY OF UNIVERSITY STUDENTS

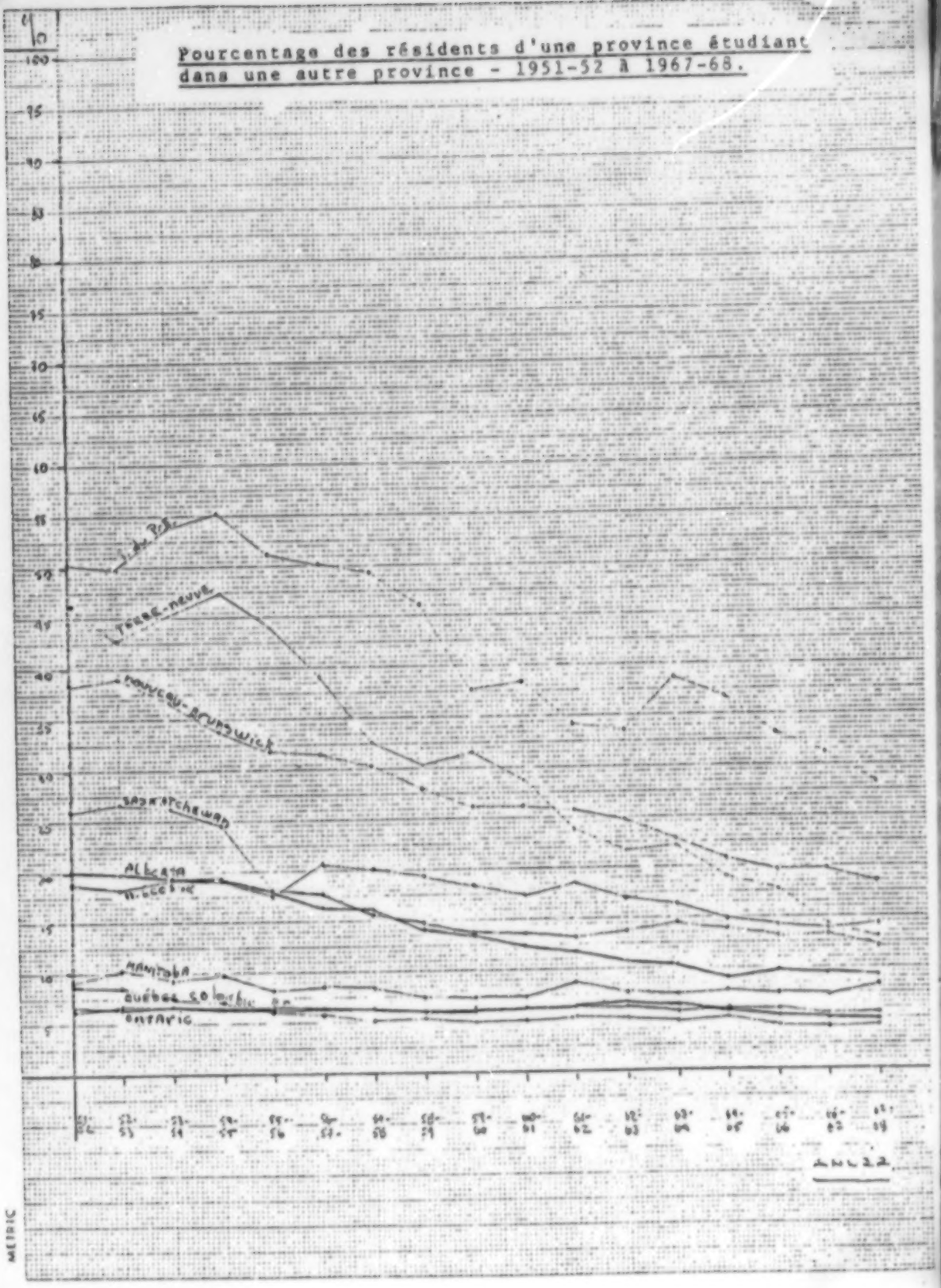
i) Canadians in Total

As may be seen in the Zsigmond-Wenaas study[5] there has been a considerable diminution in the mobility of Canadian students since 1951-52 notwithstanding a considerable increase in a number of university students during the same period. In fact, in 1951-52 10.8% of Canadian university students were studying out of their home province. That percentage had fallen 6.8% by 1967-68. We believe that financial considerations in the early 1950's and the subsequent fuller development in educational systems in poorer provinces of Canada explain this diminution in the mobility of students. Graph I indicates the trend in the percentage of students living out-of-province in 1951-52 through 1967-68. In 1967-68 according to the Zsigmond-Wenaas study, some 18,340 Canadian students were

---

5. Zsigmond, Z.E. and Wenaas, C.J.; op. cit.

Pourcentage des résidents d'une province étudiant dans une autre province - 1951-52 à 1967-68.



METRIC

TABLEAU I

Mobilité des Etudiants Universitaires

par Province 1967-68

Province	(1) Non-résidents en proportion des inscriptions universitaires (plein-temps) totales	(2) % des étudiants universitaires dans une autre province du Canada
Nfld	3.1	13.0
P.E.I.	18.0	28.4
N.S.	31.3	14.1
N.B.	30.2	18.5
Qué.	7.2	3.5
Ont.	13.1	4.9
Man.	16.4	8.1
Sask.	7.2	12.0
Atla.	9.8	9.1
B.C.	13.4	4.3

Sources : Calculé à partir des données de Zsigmond and Wenaas, op. cit.

Nous constatons que les chiffres pour l'ensemble du Canada, nous voilaient l'importance très considérable du phénomène mobilité pour certaines provinces et tout particulièrement pour les provinces Atlantiques. Il est quand même remarquable que la proportion des non-résidents dans les

studying out-of-province.

ii) Canadians By Province

The examination of mobility patterns of Canadians at the national level hides the very considerable importance of the phenomenon in certain provinces of Canada. Table I indicates the situation by province in 1967-68. It may be seen that the Atlantic provinces are particularly influenced by student mobility.

iii) Interprovincial Mobility of Canadian Post-Secondary Non-University and University Undergraduate Students By Discipline.

Some 35% of Canadian students who went out-of-province to study in 1968-69 did so to study in arts and sciences. Over 10% of all students in nursing at the university level, medicine, architecture and psychology are

---

6. The data which served to obtain these results is from the PSSP. It is strongly recommended that the reader acquaint himself with the characteristics of this sample and its biases in order to properly interpret the results presented. For example, according to PSSP, 24,500 Canadians were mobile in 1968-69. We have just seen that in 1967-68 Zsigmond and Wenaas reported 18,340 mobile students.

studying such disciplines out-of-province.

We have computed the net gain or loss by province which results from such student flows for 14 discipline groups. However, the nature of the PSSP data is such that once cross-classified by province, by discipline group and by mobility status, the data leave much to be desired.

We have also computed the net gain or loss of university graduates by province and set those along side the net gain or loss of students by province, for we believe that any financial formulae which would take into consideration mobility and attempt to adjust for it, should take into consideration not only student flows, but also manpower flows. It is interesting to note that very often provinces which seem to be contributing a lot of training to the others turn out to be net gainers when the patterns of manpower mobility are taken into consideration.

iv) Foreign Students

According to Zsigmond and Wenaas, it is estimated that approximately 14,000 Canadians were studying

abroad and that 15,356 foreign students were studying in Canada in 1967-68. We have seen that Canadian students studying out-of-province are, therefore, somewhat more numerous than Canadian students studying out-of-country.

According to PSSP, the number of foreign students studying in Canada in 1968-69 was in the order of 29,000. The differences between the Zsigmond-Wenaas and D.B.S. data indicate that much remains to be done to improve our data base in the area. Foreign students are more important at the graduate level, a high percentage of them are males, and as might be expected, a proportionately small number of them register in commerce, nursing, pharmacy, education and law.

B. The MOBILITY OF THE UNIVERSITY MANPOWER

Our basic source of data on this phenomenon, the Department of Manpower and Immigration's "Highly Qualified Manpower Survey", tells us that in 1967 some 18,700 scientists and engineers were employed in a province other than that in which they obtained their secondary school diploma. They constitute approximately 30% of all those scientists

and engineers who have completed secondary school in Canada. The provinces of Ontario and Quebec are major gainers and the provinces of Manitoba and Saskatchewan are major losers because of the interprovincial mobility of scientists and engineers.

We have made use of the data on mobility of university graduates by degree, which appeared in the J.B. MacDonald, et al, study[7] to compute the net gain or loss of Ph.D., M.A. and Bachelor degree holders by province in 1967. We have done so on an unweighted basis simply by looking at the difference in the number of scientists and engineers employed in each province in 1967 and the number of them trained over time in that province by degree on one hand, but in addition by weighting to take into consideration the fact that a Ph.D. gained by a province may or may not have obtained his M.A. in that province, and similarly may or may not have obtained his Bachelor's

---

7. MacDonald, J.B., et al, op. cit.

degree in that province. Similarly a Ph.D. who is employed in a province other than that where he obtained his Ph.D., may or may not have obtained his M.A. in that province of employment, and similarly for his Bachelor's degree. We have simply adjusted the count obtained by the first unweighted method by assuming that any Ph.D. coming to work in a province other than that where he obtained his secondary school certificate, brought with him an M.A. and a B.Sc. Needless to say, this is a very rigid assumption which we shall do away with in the subsequent analysis of the highly qualified manpower survey data where we shall observe the actual place of obtention of each of the degrees of manpower in performing such counts.

The patterns of gainers and losers by province are of most interest and it may be that the data could be developed by discipline groups analogous to those for which data were computed on the student side in order to get the net gain or loss by province taking into consideration both students and university manpower flows.

II. FACTORS EXPLAINING MOBILITY PATTERNS OF STUDENTS AND MANPOWER

A. Factors Explaining the Mobility of Students

We begin by making a distinction between those factors which induce mobility and those which allow it. By those which induce mobility, we refer to factors such as a center of excellence in a province other than the home province, the desire to work in a province other than the home province, etc. We distinguish such inducing factors which we have not quantified or tested the importance of[8] from a set of mobility habilitating factors, both non-economic and economic. This distinction, though arbitrary, we consider helpful in the analysis.

i) Non-economic Factors

Under non-economic habilitating factors, we have examined from PSSP data the influence of sex, marital status, mother tongue and working tongue upon the mobility of students. Among socio-economic habilitating factors, we have examined the combined income of parents, the

---

8. See R.M. Pavalko, "A Survey of Canadian Students in the United States", paper presented to the 1967 Canadian Political Science Association Conference on Statistics, Ottawa, June 1967, for such an attempt.

level of education of mother and father, the income of students by source and distance.

We did not analyse student expenditure patterns, though we consider it essential and necessary to relate income and expenditure patterns of students to fully comprehend the mobility phenomenon. We hope to do so in a subsequent study.

The PSSP data indicate that the most mobile student is a married male. His mobility increases as the level of study increases. However, since the mobility of married females is less than that of single females, and since the marriage ratio increases as the level of studies increase, married females are less mobile as study increases than are single females.[9]

Our study of mobility patterns by mother tongue indicates that in Canada in general, in New Brunswick and in Quebec, students whose mother tongue is English are more mobile than those with mother tongue in French,

---

9. There is probably a downward bias involved in that many married females accompany their husbands and study part-time in the province of study of their husbands.

whereas in Ontario, those students whose mother tongue is French are more mobile than those whose mother tongue is English. New Brunswick graduate students whose mother tongue is English are particularly mobile as are Ontario graduate students whose mother tongue is French are particularly mobile; the former probably going to Ontario and Nova Scotia and the latter to Quebec for graduate studies.

Mobility rates increase as the level of studies increases, except for Quebec undergraduate students whose mother tongue is English.

Examination of the relationship of student mobility to mother tongue and working language indicates that the student whose working language is not his mother tongue is more mobile than his confrère who works in his mother tongue except for the Ontario francophone and the Quebec anglophone. It seems, therefore, that the typical mobile student is a male, is married, his mother tongue is English and he is a graduate student.

ii)Socio-Economic Factors

In order to determine whether parents' combined income, father and mother's level of education, etc., are related to mobility patterns of students, we computed rank correlation coefficients between the variables singly. The combined income of parents seems to have little influence upon the mobility pattern- of post-secondary students. Father's education is, however, very important, and mother's education somewhat less so. As might be expected, parents of mobile students are more affluent and more educated than those of non-mobile students.

Another section of the paper examines in some detail total and average income of Canadian mobile and non-mobile students by source. It is quite impossible to summarize the results of such an analysis in this brief paper. As might be expected, the mobile student has higher income than his non-mobile counterpart. The differential between their income increases as the level of study increases, and scholarships and reduction in assets seem to be relatively more important sources of income for mobile students than for non-mobile students.

Federal and provincial policies as they relate to scholarships of mobile and non-mobile students are examined in the document, but the results of this study having not yet been submitted to the Council of Ministers of Education, the authors do not feel that they are free to indicate the nature of their findings at present.

As might be expected, mobile students who study out-of-province travel greater distances in doing so than non-mobile students who do so within their province.

B. Theses Explaining the Mobility of University Graduates.

We hope, in a forthcoming project, to test the relative explanatory value of the income thesis and the job vacancy thesis, as they relate to manpower mobility. According to the income thesis, manpower mobility occurs essentially because of regional income differentials. This hypothesis assumes perfect competition and full employment on the labour market.

The job vacancy hypothesis brings to the fore frictional and structural problems and does not assume that the local labour markets are in equilibrium.

We would like to develop and test a variant of the job vacancy thesis which would take into consideration the fact that the industrial composition of employment is very different from province to province, that these structural differences reflect themselves in the demand for manpower which differences in demand for manpower have very definite implications upon the composition of output which should be forthcoming from educational institutions. In this hypothesis equilibrium between the demand for manpower and the output of educational and training institutions gives rise to mobility patterns which may be an indication to educational planners in the province as to how they should change the composition of students in training in the different provinces.

We have nowpartially developed measures of the relationship between profession and occupation and we hope to make use of the data from the highly qualifed manpower survey in order to test the degree of correspondence between

the educational output of different provinces and the labour demand by province.

III. FINANCIAL LOSS OR GAIN BY PROVINCE

We would hope eventually to arrive at a net monetary gain or loss by province due to the mobility of both students and graduates. This would call for the cost of training and present value of income data to be applied to net gains or losses of the students and university graduates by province.

IV. CONCLUSION

An appendix to the study reviews the policies of different provinces and universities as they relate to in and out-of-province admissions policies, fees, and quotas. Here again we do not feel free to discuss the results of our analysis in view of the fact that the report has not yet been submitted to the Council of Ministers of Education.

The study concludes with some recommendations concerning the characteristics of financial formulae to be determined by either the Council of Ministers of Education or the federal government. It is suggested that such formulae adapt to and take into consideration the mobility patterns of students and manpower in Canada.